

2003 MI BRFS Estimates for Hearing Loss
August 25, 2004

Hearing Loss and Noise Exposures at Work

**Michigan BRFS
2003**

Michigan Department of Community Health
Bureau of Epidemiology
Epidemiology Services Division

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Methods

The Michigan Behavioral Risk Factor Survey (BRFS) is an annual, statewide telephone survey of Michigan adults aged 18 years and older that is conducted through a collaborative effort among the Behavioral Surveillance Branch (BSB) of the Centers for Disease Control and Prevention, the Michigan State University Institute for Public Policy and Social Research (IPPSR), and the Michigan Department of Community Health. Michigan BRFS data contribute to the national Behavioral Risk Factor Surveillance System that is managed by BSB.

For the 2003 Michigan BRFS, data were collected quarterly by IPPSR. The sample of telephone numbers that were utilized for data collection was selected using a list-assisted, random-digit-dialed methodology with a disproportionate stratification based on phone bank density, and whether or not the phone numbers were directory listed.

In 2003, the total sample size of completed interviews was 3551; the questions on hearing loss and noise exposures are included at the end of this report as an appendix ([Appendix A](#)).

Estimates were weighted to adjust for the probabilities of selection and a post-stratification weighting factor that adjusted for the distribution of Michigan adults by age, sex, and race/ethnicity. All analyses were performed in SUDAAN, a statistical computing program that was designed for complex sample surveys.

If you would like additional information concerning these estimates, please contact Michelle Cook at CookM1@michigan.gov.

Results

According to the 2003 BRFS, 19.0% of Michigan adults, aged 18 years and older, were estimated to have hearing loss ([Table 1](#)). Hearing loss was defined as having deafness or trouble hearing in one or both ears, or using a hearing aid. Those aged 75 years and older (44.2%) were more likely to have hearing loss than any other age group, 18-44 (10.2%), 45-54 (21.3%), 55-64 (25.7%), 65-74 (33.1%). Men were more likely than women to have hearing loss (23.2% vs. 15.1%), and Whites were more likely than Blacks to have hearing loss (20.5% vs. 11.7%). The estimated proportion of the adult Michigan population with hearing loss was lower among those who had a college degree (13.7%) when compared to those who did not get a high school degree (23.5%), to those who had a high school degree (20.5%), and to those who had some college education (21.0%). The proportion of those with hearing loss was lower among those who had an income greater than or equal to \$50,000 (14.8%) when compared to those who had an income less than \$20,000 (22.0%), to those who had an income between \$20,000 and \$34,999 (22.2%), and to those who had an income between \$35,000 and \$49,999 (19.7%).

Among those who had hearing loss, the estimated mean age at which deafness developed or trouble hearing occurred in one or both ears was 40.2 years ([Table 2](#)), the estimated median age was 39.5 years ([Table 3](#)). Men were more likely to be younger than women when deafness developed or trouble hearing occurred (mean ages 37.6 years vs. 43.9 years) (median ages 36.6 years vs. 44.6 years). Those who had an income of less than \$20,000 were more likely to be older when deafness developed or trouble hearing occurred than those who had an income that was greater than or equal to \$50,000 (mean ages 44.9 years vs. 35.0 years).

The estimated proportion of adults with hearing loss who had ever been told by a health care professional that their hearing loss was due to noise exposure at work was 25.9% ([Table 4](#)). Among those with hearing loss, the estimated proportion of those who had ever been told by a health care professional that their hearing loss was due to noise exposure at work was lower among 75+-year olds (10.9%) when compared to 18-44-year olds (27.3%), 45-54-year olds (27.9%), 55-64-year olds (33.2%), and 65-74-year olds (30.6%). Among adults with hearing loss, men were more likely than women to have ever been told by a health care professional that their hearing loss was due to noise exposure at work (36.4% vs. 9.8%).

Twenty percent (20.4%) of those adults with hearing loss had ever told their health care professional that their hearing loss was due to noise exposure at work ([Table 4](#)). The estimated proportion of those with hearing loss who had ever told a health care professional that their hearing loss was due to noise exposure at work was lower among 75+-year olds (9.6%) when compared to 45-54-year olds (26.6%), 55-64-year olds (26.6%), and 65-74-year olds (21.6%). Among adults with hearing loss, men were more likely than women to have ever told a health care professional that their hearing loss was related to noise exposure at work (27.9% vs. 9.1%).

Also among adults with hearing loss, 29.9% had either ever told a health care professional or a health care professional ever told them that their deafness or trouble hearing was due to noise exposure at work ([Table 4](#)). This was lower among those aged 75 years and older (15.4%) than compared to any other age group, 18-44-year olds (30.6%), 45-54-year olds (31.5%), 55-64-year olds (39.2%), and 65-74-year olds (33.8%). Men were more likely than women to have ever been told by a health care professional or had ever told a health care professional that their deafness or trouble hearing was due to noise exposure at work (41.6% vs. 12.4%). Those who were college graduates (18.6%) were less likely than those who had some college education (33.4%) and those who were high school graduates (33.5%) to have ever been told by a health care professional or ever told a health care professional that their deafness or hearing loss was due to noise exposure at work.

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Table 1: Hearing Loss 2003 Michigan BRFs (% \pm 95% Confidence Interval Limit)			
Demographic Characteristics	Hearing Loss ^a	Hearing Loss in One or Both Ears ^b	Used Hearing Aid ^c
Total	19.0 \pm 1.4	18.9 \pm 1.4	2.6 \pm 0.5
Age			
18 - 44	10.2 \pm 1.8	10.2 \pm 1.8	0.4 \pm 0.4
45 - 54	21.3 \pm 3.4	21.3 \pm 3.4	0.9 \pm 0.7
55 - 64	25.7 \pm 3.9	25.5 \pm 3.9	3.0 \pm 1.5
65 - 74	33.1 \pm 5.1	33.1 \pm 5.1	7.7 \pm 2.7
75 +	44.2 \pm 5.3	43.1 \pm 5.3	14.9 \pm 3.7
Gender			
Male	23.2 \pm 2.4	23.2 \pm 2.4	3.0 \pm 0.8
Female	15.1 \pm 1.6	14.9 \pm 1.6	2.2 \pm 0.6
Race			
White	20.5 \pm 1.6	20.3 \pm 1.6	3.0 \pm 0.6
Black	11.7 \pm 4.1	11.7 \pm 4.1	0.4 \pm 0.6*
Education			
Less than high school	23.5 \pm 4.8	23.4 \pm 4.8	4.4 \pm 2.0
High school graduate	20.5 \pm 2.6	20.3 \pm 2.6	2.8 \pm 0.9
Some college	21.0 \pm 2.9	20.9 \pm 2.9	2.0 \pm 0.8
College graduate	13.7 \pm 2.2	13.6 \pm 2.2	2.4 \pm 0.9
Household Income			
< \$20,000	22.0 \pm 3.8	21.9 \pm 3.8	3.2 \pm 1.3
\$20,000 - \$34,999	22.2 \pm 3.3	22.1 \pm 3.3	3.9 \pm 1.3
\$35,000 - \$49,999	19.7 \pm 3.7	19.6 \pm 3.7	2.2 \pm 1.2
\$50,000 +	14.8 \pm 2.1	14.7 \pm 2.1	1.5 \pm 0.7
^a The proportion who reported that they had deafness or trouble hearing in one or both ears, or that they used a hearing aid now. ^b The proportion who reported that they had deafness or trouble hearing in one or both ears now. ^c The proportion who reported that they used a hearing aid now. * The 95% confidence interval exceeds possible limits.			

Table 2: Mean Age When Hearing Loss Occurred
2003 Michigan BRFs
(Mean Age \pm 95% Confidence Interval Limit)

Demographic Characteristics	Mean Age When Hearing Loss Occurred ^a
Total	40.2 \pm 1.8
Gender	
Male	37.6 \pm 2.2
Female	43.9 \pm 3.0
Education	
Less than high school	44.6 \pm 5.3
High school graduate	41.1 \pm 3.1
Some college	37.0 \pm 3.1
College graduate	41.1 \pm 3.9
Household Income	
< \$20,000	44.9 \pm 4.2
\$20,000 - \$34,999	41.1 \pm 4.1
\$35,000 - \$49,999	40.1 \pm 4.2
\$50,000 +	35.0 \pm 4.1

^a Among those who reported having trouble hearing in one or both ears, or used a hearing aid, the mean age at which deafness developed or trouble hearing occurred in one or both ears.

Table 3: Median Age When Hearing Loss Occurred 2003 Michigan BRFs		
Demographic Characteristics	Median Age When Hearing Loss Occurred^a	95% Confidence Interval
Total	39.5	(37.4 - 42.1)
Gender		
Male	36.6	(34.1 - 41.2)
Female	44.6	(41.4 - 50.1)
Education		
Less than high school	44.3	(34.1 - 51.9)
High school graduate	39.7	(35.1 - 45.3)
Some college	38.0	(33.9 - 40.3)
College graduate	40.0	(35.8 - 46.3)
Household Income		
< \$20,000	46.6	(38.3 - 51.6)
\$20,000 - \$34,999	41.3	(33.6 - 48.9)
\$35,000 - \$49,999	39.3	(35.0 - 46.5)
\$50,000 +	35.4	(33.2 - 40.4)
^a Among those who reported having trouble hearing in one or both ears, or used a hearing aid, the median age at which deafness developed or trouble hearing occurred in one or both ears.		

Table 4: Noise Exposure at Work
2003 Michigan BRFS
(% \pm 95% Confidence Interval Limit)

Demographic Characteristics	Health Care Professional Ever Told that Respondent's Deafness or Trouble Hearing Due to Noise Exposure at Work ^a	Respondent Ever Told Health Care Professional that Deafness or Trouble Hearing Due to Noise Exposure at Work ^b	Either a Health Care Professional or the Respondent Ever Told Deafness or Trouble Hearing Due to Noise Exposure at Work ^c
Total	25.9 \pm 3.9	20.4 \pm 3.5	29.9 \pm 4.0
Age			
18 - 44	27.3 \pm 9.9	17.8 \pm 8.3	30.6 \pm 10.2
45 - 54	27.9 \pm 8.5	26.6 \pm 8.6	31.5 \pm 9.0
55 - 64	33.2 \pm 8.6	26.6 \pm 7.9	39.2 \pm 8.9
65 - 74	30.6 \pm 9.4	21.6 \pm 8.4	33.8 \pm 9.4
75 +	10.9 \pm 5.0	9.6 \pm 4.6	15.4 \pm 5.7
Gender			
Male	36.4 \pm 5.7	27.9 \pm 5.3	41.6 \pm 5.9
Female	9.8 \pm 3.4	9.1 \pm 3.4	12.4 \pm 3.8
Education			
Less than high school	27.3 \pm 10.7	15.7 \pm 7.7	30.9 \pm 10.9
High school graduate	27.9 \pm 6.8	23.1 \pm 6.6	33.5 \pm 7.2
Some college	29.3 \pm 7.4	23.4 \pm 6.7	33.4 \pm 7.6
College graduate	16.8 \pm 6.9	15.3 \pm 6.6	18.6 \pm 7.1
Household Income			
< \$20,000	26.8 \pm 8.7	17.0 \pm 6.9	30.2 \pm 8.9
\$20,000 - \$34,999	22.8 \pm 7.5	22.5 \pm 7.5	30.7 \pm 8.3
\$35,000 - \$49,999	26.9 \pm 10.4	18.6 \pm 8.8	30.8 \pm 10.8
\$50,000 +	28.0 \pm 7.6	23.9 \pm 7.3	31.1 \pm 7.8

^a Among those who reported having trouble hearing or using a hearing aid, the proportion who reported that a health care professional ever told them that their deafness or trouble hearing was related to noise exposure at work.

^b Among those who reported having trouble hearing or using a hearing aid, the proportion who reported that they ever told a health care professional that their deafness or trouble hearing was related to noise exposure at work.

^c Among those who reported having trouble hearing or using a hearing aid, the proportion who reported either that a health care professional ever told them or that they ever told a health care professional that their deafness or trouble hearing was related to noise exposure at work.

Appendix A: Noise Questions on 2003 MI BRFs

27.1 Do you now have deafness or trouble hearing in one or both ears? (375)

1 Yes
2 No
7 Don't know / Not sure
9 Refused

27.2 Do you now use a hearing aid? (376)

1 Yes
2 No
7 Don't know / Not sure
9 Refused

If Q27.1=2 and Q27.2=2, then go to Section 28, otherwise continue to Q27.3.

27.3 How old were you when you first developed deafness or trouble hearing in one or both ears? (377–378)

___ Age [96 = 96 and older]
9 8 Don't know / Not sure
9 9 Refused

27.4 Did a doctor or other medical person ever tell you that your deafness or trouble hearing was related to noise exposure at work? (379)

1 Yes
2 No
7 Don't know / Not sure
9 Refused

27.5 Did you ever tell a doctor or other medical person that your deafness or trouble hearing was related to noise exposure at work? (380)

1 Yes
2 No
7 Don't know / Not sure
9 Refused